

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A transgenic plant comprising a genetic construct wherein said construct comprises:

(a) a promoter, wherein said promoter is operatively linked to

(b) a nucleic acid sequence encoding a plant Hsp100 family amino acid sequence, wherein said nucleic acid sequence encodes an amino acid sequence that is sufficient to protect the plant or a cell of the plant against heat, and wherein the amino acid sequence has at least about 60% overall amino acid identity to SEQ ID NO:17.

2. (Previously Presented) The transgenic plant of Claim 1 wherein said plant Hsp100 family amino acid sequence is selected from the group consisting of SEQ ID NO:3, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:23, SEQ ID NO:24, SEQ ID NO:27, SEQ ID NO:28, and SEQ ID NO:29.

3. (Original) The transgenic plant of Claim 1 wherein said nucleic acid sequence encoding said plant Hsp100 family amino acid sequence is endogenous to said transgenic plant.

4. (Currently Amended) The transgenic plant of Claim 1 wherein said nucleic acid sequence has sequence ~~similarity~~ identity with a sequence selected from the group consisting of SEQ ID NO:11, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:33, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:38, SEQ ID NO:39, SEQ ID NO:40, ~~and~~ SEQ ID NO:43, and SEQ ID NO:47.

5. (Original) The transgenic plant of Claim 1 wherein said transgenic plant is selected from the group consisting of a cereal, a grass, an ornamental plant, a crop plant, a food plant, an oil-producing plant, a synthetic product-producing plant, an environmental waste absorbing plant, an alcohol plant, a medicinal plant, a recreational plant, and an animal feed plant.

6. (Previously Presented) The transgenic plant of Claim 1 wherein said plant is selected from the group consisting of cotton, canola, soybean, corn, wheat, tobacco, sorghum, potato, tomato, rice, and Arabidopsis thaliana.

7. (Original) The transgenic plant of Claim 1 wherein said promoter is selected from the group consisting of a constitutive promoter and an inducible promoter.

8. (Original) The constitutive promoter of Claim 7 wherein said promoter is selected from the group consisting of a 35S cauliflower mosaic virus promoter, a CaMV-35Somega promoter, an Arabidopsis ubiquitin UBQ1 promoter, and a barley leaf thionin BTH6 promoter.

9. (Original) The constitutive promoter of Claim 8 wherein said promoter is a 35S cauliflower mosaic virus promoter

10. (Original) The inducible promoter of Claim 7 wherein said promoter is heat inducible.

11. (Original) The heat inducible promoter of Claim 10 wherein said promoter is selected from the group consisting of a heat shock protein promoter, a heat shock transcription factor promoter, a chaperonin promoter, an A1494 promoter, a rice genomic metallothionein-like gene (rgMT) promoter a ubiquitin promoter, an FLP promoter, an Oryza sativa metallothionein like gene-2 (OsMT-2) promoter, a Glycine max STI1 (gmsti) promoter, a synthetic heat shock promoter and a TCH gene promoter.

12. (Currently Amended) A method of increasing stress tolerance of a plant comprising the steps of:

preparing a transgenic plant comprising a genetic construct wherein said construct comprises a promoter, wherein said promoter is operatively linked to a nucleic acid sequence encoding a plant Hsp100 family amino acid sequence, wherein said nucleic acid sequence encodes an amino acid sequence that is sufficient to protect the plant or a cell of the plant against heat, and wherein the amino acid sequence has at least about 60% overall amino acid identity to SEQ ID NO:17; and

exposing said transgenic plant to a heat pretreatment.

13. (Original) The method of Claim 12, wherein said stress tolerance is thermotolerance.

14. (Original) The method of Claim 12 wherein said plant is a seedling.

15. (Original) A method of producing a crop comprising the steps of:

preparing a transgenic plant in accordance with Claim 1, wherein said transgenic plant is a crop plant;

growing said transgenic crop plant in an environment which produces heat stress; and

extracting the crop from said transgenic crop plant.

16. (Original) The method of Claim 15 wherein said crop plant is selected from the group consisting of cotton, tobacco, corn, sorghum, rice, wheat, peanut, soybean, potato, tomato and canola.

17.-26. (Cancelled)

27. (Currently Amended) As a composition of matter, a seed from a transgenic plant of claim 1, wherein said seed comprises said construct.

28. (Currently Amended) As a composition of matter, a seed from a transgenic plant of claim 2, wherein said seed comprises said construct.

29. (Previously Presented) The transgenic plant of claim 1, wherein said nucleic acid sequence encodes an amino acid that:

- a) protects the plant from more than one type of stress; and
- b) is necessary for cellular functioning when a stress is present.

30. (Currently Amended) The transgenic plant of claim 29, wherein said nucleic acid sequence encodes an amino acid sequence that: ~~e)~~ is not necessary for cellular functioning when the stress is absent.

31. Cancel

32. (Previously Presented) The transgenic plant of claim 1, wherein said nucleic acid sequence encodes an amino acid sequence that comprises at least one nucleotide binding site.

33. (Previously Presented) The transgenic plant of claim 1, wherein said nucleic acid sequence is from corn, rice, soybean, tobacco, or wheat.

34. (Currently Amended) A transgenic plant comprising a genetic construct, wherein said construct comprises:

(a) a promoter, wherein said promoter is operatively linked to

(b) a nucleic acid sequence encoding an amino acid sequence having at least about 60% overall amino acid ~~homology~~ identity to Arabidopsis Hsp101 amino acid sequence.

35. (Currently Amended) The transgenic plant of claim 34, wherein said nucleic acid sequence encodes an amino acid sequence having at least about 70% overall amino acid ~~homology~~ identity to Arabidopsis Hsp101 amino acid sequence.

36. (Currently Amended) The transgenic plant of claim 34, wherein said nucleic acid sequence encodes an amino acid sequence having at least about 80% overall amino acid ~~homology~~ identity to Arabidopsis Hsp101 amino acid sequence.

37. (Cancel)

38. (Currently Amended) The transgenic plant of claim 34, wherein said nucleic acid sequence encodes an amino acid sequence that:

a) protects the plant from more than one type of stress; and

b) is necessary for cellular functioning when a stress is present.

39. (Currently Amended) The transgenic plant of claim 38, wherein said nucleic acid sequence encodes an amino acid sequence that: ~~that; e)~~ is not necessary for cellular functioning when the stress is absent.

40. (Previously Presented) The transgenic plant of claim 34, wherein said nucleic acid sequence encodes an amino acid sequence that is sufficient to protect the plant or a cell of the plant against heat.

41. (Previously Presented) The transgenic plant of claim 34, wherein said nucleic acid sequence encodes an amino acid sequence that comprises at least one nucleotide binding site.

42. (Previously Presented) The transgenic plant of Claim 34, wherein said transgenic plant is selected from the group consisting of a cereal, a grass, an ornamental plant, a crop plant, a food plant, an oil-producing plant, a synthetic product-producing plant, an environmental waste absorbing plant, an alcohol plant, a medicinal plant, a recreational plant, and an animal feed plant.

43. (Previously Presented) The transgenic plant of claim 34, wherein said nucleic acid sequence is from corn, rice, soybean, tobacco, or wheat.

44. (Previously Presented) The inducible promoter of Claim 34, wherein said promoter is heat inducible.